

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In Re Application of:

Docket No.: 821405-1010

KWELDAM, Adriaan Cornelis

Art Unit: 1794

Serial No.: 10/502,108

Examiner: Bekker, Kelly J.

Filing Date: July 21, 2004

Confirmation No.: 4000

For: **Method for the Preparation of a Meat Substitute Product, Meat Substitute Product
Obtained with the Method and Ready to Consume Meat Substitute Product**

APPEAL BRIEF UNDER 37 C.F.R. § 41.37

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Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

Sir:

This Appeal Brief under 37 C.F.R. § 41.37 is submitted in support of the Notice of Appeal filed April 3, 2009. This appeal is taken from the Final Office Action mailed December 3, 2008, rejecting claims 1, 2, 4-14 and 21-27, as clarified by the Advisory Action mailed March 4, 2009.

It is not believed that extensions of time or fees are required to consider this Appeal Brief, in addition to the Petition for Extension simultaneously filed. However, in the event that additional extensions of time are necessary to allow consideration of this paper, such extensions are hereby petitioned under 37 C.F.R. §1.136(a), and any fees required therefore are hereby authorized to be charged to Deposit Account No. 20-0778.

I. REAL PARTY IN INTEREST

The real party in interest is NUG Nahrungs-und Genussmittel Vertriebsgesellschaft mbH, a corporation established under the laws of Germany and having a principal place of business at Brettacherweg 14, 71334 Waiblingen, Germany.

II. RELATED APPEALS AND INTERFERENCES

There are no known related appeals or interferences that will affect or be affected by a decision in this Appeal.

III. STATUS OF CLAIMS

Claims 1, 2, 4-14 and 21-27 are pending and finally rejected. Claims 3 and 15-20 are canceled. The final rejection of claims 1, 2, 4-14 and 21-27 is appealed.

IV. STATUS OF AMENDMENTS

Applicant/Appellant (hereinafter "Applicant") amended claims 1, 9-11, and 21 in the Response filed February 2, 2009, after the Final Office Action, mailed December 3, 2008. Amendments to claims 1, 9-11, and 21 were entered in the Advisory Action mailed March 4, 2009. A copy of the current claims is attached in the Claims Appendix (See below).

V. SUMMARY OF CLAIMED SUBJECT MATTER

The claimed inventions are summarized below with reference numerals and references to the written description ("Specification") and drawings. The subject matter which follows appears in the original disclosure at least where indicated, and may appear in other places within the original disclosure.

Independent claim 1 recites a method for the preparation of a meat substitute product which comprises protein. See Applicant's Specification of July 21, 2004, page 1, lines 7-16;

page 5, lines 7-10 and page 10, lines 23-24. The method comprises the steps of combining a protein material comprising a milk protein material, alginate, and water, in the presence of an amount of a calcium complex-forming agent, to form a homogeneous mixture. See Applicant's Specification of July 21, 2004, page 1, lines 7-16; page 7, lines 20-31; page 9, lines 35-38; page 10, lines 27-28. The homogeneous mixture is mixed with a solution of a metal cation with a valency of at least 2 to form a fibrous product, which is isolated. See Applicant's Specification of July 21, 2004, page 1, lines 7-16; page 9, lines 35-38; page 10, lines 25-32.

VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

The following grounds of rejections are to be reviewed on appeal:

A. Claims 1, 2, 4-14, and 23-27 stand rejected under 35 U.S.C. §103(a) as unpatentable over *Shenouda* (U.S. Patent No. 4,423,083) in view of *Monsanto* (WIPO Publication No. WO 96/13177).

B. Claims 21 and 22 stand rejected under 35 U.S.C. §103(a) *Shenouda* (U.S. Patent No. 4,423,083) in view of *Monsanto* (WIPO Publication No. WO 96/13177), further in view of *Lusas* (U.S. Patent No. 5,300,312).

Applicant understands from the Final Office Action and the Advisory Action that all other grounds for rejection have been withdrawn and that no other grounds for rejection remain outstanding.

VII. ARGUMENTS

A. 35 U.S.C. §103(a) Rejection: *Shenouda* in view of *Monsanto*

Applicant respectfully submits the rejection of independent claim 1 under 35 U.S.C. §103(a) should be overturned, since no *prima facie* case of obviousness is established. If claim 1 is nonobvious over the cited references, Applicant respectfully submits pending dependent claims 2, 4-14, and 23-27 are also nonobvious. *In re Fine*, 5 USPQ.2d 1596, 1600 (Fed. Cir. 1988).

No *prima facie* case of obviousness has been established to adequately support the rejection, for at least the following reasons:

- 1) No adequate rationale was provided which proves by a preponderance of the evidence that Shenouda and Monsanto are combinable in a manner that would lead one of skill in the art to the method for the preparation of a meat substitute product recited in the rejected claims;
- 2) Shenouda and Monsanto teach away from their combination;
- 3) Modification of Shenouda with Monsanto renders Shenouda inoperable for its intended purpose; and
- 4) Shenouda and Monsanto are drawn to solving different problems.

As established by the Court of Appeals for the Federal Circuit, the U.S. Patent and Trademark Office ("USPTO") bears the burden under 35 U.S.C. 103(a) to establish a *prima facie* case of obviousness by providing a rationale demonstrating that an objective teaching in the prior art or knowledge generally available would lead one of ordinary skill in that art to the claimed invention. *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596, 1598 (Fed. Cir. 1988). This requirement is not negated by *KSR*, which points out that a rationale should accompany the legal conclusion of obviousness and should be made explicit. *KSR International Co. v. Teleflex Inc.*, 550 U.S. 398, 82 USPQ2d 1385, 1395-97, 127 S.Ct. 1727, 1742 (2007). The legal standard to be met for *prima facie* obviousness is "a preponderance of evidence", which requires the evidence to be more convincing than the evidence which is offered in opposition to it. With regard to rejections under 35 U.S.C. 103(a), the Examiner must provide evidence which as a whole shows that the legal determination sought to be proved (i.e., the reference teachings establish a *prima facie* case of obviousness) is more probable than not. *In re Kahn*, 441 F.3d 977, 988, 78 USPQ2d 1329, 1336 (Fed. Cir. 2006). See also *KSR*, 550 U.S. at 398, 82 USPQ2d at 1396 (quoting Federal Circuit statement with approval).

1) In the present case, however, the Examiner presents no rationale demonstrating by a preponderance of the evidence that the teachings of Shenouda and Monsanto are combinable

in a manner that would lead one of ordinary skill in the art to the method for the preparation of a meat substitute product recited in the rejected claims. The Final Office Action merely states,

"It would have been obvious to one of ordinary skill in the art at the time the invention was made to include a sequesterant, i.e. a calcium complex forming agent, with the hydrocolloid or the protein, so that when combined the hydrocolloid would not precipitate with the protein in high temperatures, as taught by Monsanto." last paragraph, lines 4-8.

This single sentence is the only rationale given by the Final Office Action for combining the teachings of Shenouda and Monsanto. It, however, fails to provide articulated reasoning proving obviousness by a preponderance of the evidence. This "rationale" of the Final Office Action is merely a conclusion with no supporting analysis. A simple analysis of the two references shows – contrary to this rationale of the Final Office Action – that Shenouda does not want to prevent protein precipitation at high temperatures like Monsanto. Analysis of the two references (provided in more detail below) shows each reference seeks to make entirely different products by entirely different methods and that their respective methods are irreconcilable and not combinable. Thus, not only is the Examiner's "rationale" merely conclusory, it is incorrect.

"[R]ejections on obviousness grounds *cannot be sustained by mere conclusory statements*; instead, there must be some *articulated reasoning* with some rational underpinning to support the legal conclusion of obviousness." *KSR*, 550 U.S. at 398, 82 USPQ2d at 1396, S. Ct. at 1741 (2007) (citing *In re Kahn*, 441 F.3d 977, 988 (C.A.Fed. 2006)) (Emphasis added). The Court further stated it is "important to *identify a reason* that would have prompted a person of ordinary skill in the relevant field to combine the elements in the way the claimed new invention does." *Id.* (Emphasis added). An invention composed of several elements is not proved obvious merely by demonstrating that each of its elements was somehow, independently, known in the prior art.

There must be adequate prior art support involved for modifications required of the references to complete the PTO's *prima facie* case of obviousness and shift the burden of going

forward to Applicant. The mere fact that it is possible to find two isolated teachings that might be combined in such a way to produce a new product does not necessarily render such production obvious. *In re Grabiak*, 769 F.2d 729, 226 USPQ 870 (Fed. Cir. 1985). See also *In re Levitt*, 11 USPQ2d 1315, 1316 (Fed. Cir. 1989 – unpublished) ("The mere fact that both references originate from the herbicide art does not provide any teaching or suggestion to combine them. Nor does the fact that both references concern compounds containing a phenyl ring suggest that substituents suitable in one case would be expected to be suitable in the other."). Because there is no objective rationale provided to combine Shenouda and Monsanto to yield the method encompassed by the rejected claims, *prima facie* obviousness is negated, and Applicant respectfully requests the rejections be withdrawn.

The Advisory Action attempts to overcome this lack of objective rationale by presenting the view that a person of ordinary skill would have been motivated to combine Shenouda and Monsanto "as both references teach of edible protein gels". This statement is a misstatement and gross oversimplification of the references. There are fundamental differences between on the one hand the alginate-based fabricated protein fiber bundles of Shenouda that can be used in meat analogs and on the other hand the gellan-based, heat stable gel pieces of Monsanto that can suitably be added to beverages, retorted snacks, dessert toppings, puddings and retort stable protein gels (page 2, lines 27 till page 3, line 4).

Even if a skilled person would combine Shenouda and Monsanto, Applicant fails to see how the combined teachings would lead such a skilled person to the subject matter of the pending claims. More particularly, Applicant fails to see why a person of ordinary skill in the art would have wanted to take measures to prevent protein precipitation (as in Monsanto) in the fabricated protein fiber bundles of Shenouda, especially since Shenouda actually teaches a process in which heating must be employed to coagulate said protein! As observed in Applicant's reply of January 2, 2009 "These conflicting teachings between Shenouda and Monsanto are not reconciled or explained by

the Office Action". Nor are they reconciled or explained in the Advisory Action. Apparently the Examiner concedes this point.

The Advisory Action further attempts to overcome the lack of objective rationale by the statement:

"Applicant [sic] argues that there is no motivation to prevent protein precipitation as in Monsanto in the protein fiber bundles as taught by Shenouda. Applicant's [sic] argument is not convincing as Monsanto teaches a method of reducing and thus controlling the protein precipitation of the gelling solution and to better control the amount of gel fibers would be desirable."

This statement is both a misstatement of Applicant's argument and a misstatement of Monsanto's teaching. Preventing or reducing protein precipitation has nothing whatsoever to do with Applicant's pending claims. In fact, reducing or preventing protein precipitation is contrary to the recitations in Applicant's claims. In particular, claim 1 recites a method for the preparation of a meat substitute product which comprises protein, wherein: a) a protein material, alginate and water are combined; b) the composition from step a) is formed into a homogenous mixture; c) the homogeneous mixture from b) is mixed with a solution of a metal cation with a valency of at least 2, in order to form a fibrous product; and d) the fibrous product is isolated...". Reduction and/or prevention of protein precipitation would go against Applicant's recited formation of a fibrous product and isolation of the product.

Moreover, Monsanto provides no teaching or suggestion to control the amount of gel fibers, let alone that such control would be desirable. In fact, there is no mention or reference whatsoever in Monsanto to "fibers" or "gel fibers". This statement is, therefore, unfounded.

As evident from page 2, lines 6-9, Monsanto provides *"gellan gum gel pieces containing milk solids which are retort-stable, and solves the stability problem which arises when it is attempted to incorporate milk solids, including milk protein, in a gellan gum gel piece"*.

On page 1, lines 34 ff. Monsanto further states: Following procedures described in the prior art, where the source of calcium is added at or near the boiling point of the gellan gum solution, the milk protein precipitates prior to formation of the gel. The resulting gel is a non-

homogeneous melting gel which breaks down following exposure to retort conditions (120 °C for 20 minutes). Retort conditions are known in the art as those conditions used to sterilize foods.

Monsanto teaches to use sequestrants to prevent protein precipitation prior to gellan gum gel formation in case a source of calcium is added at or near the boiling point of the gellan gum solution, as evidenced by the following passages from Monsanto:

- Page 3, lines 32-34 and page 4, lines 12-14: *Optionally, sequestrants such as sodium citrate, at levels of up to 0.1% (e.g. between 0.01 – 0.1%) are used to facilitate gel formation and stability*
- Page 6, lines 31-34: *Sequestrants enhance the process by providing greater flexibility in determining appropriate temperature conditions during gel preparation. These sequestrants reduce protein precipitation at elevated temperatures*
- Example 6: *Example 4 was repeated except that the level of calcium lactate was 0.1% and addition of calcium lactate was conducted at temperature near boiling. Protein precipitated prior to gel formation. The formed gel was not retort stable. Note: In Example 4 no precipitation occurred when calcium lactate was added (0.15%) to the solution at 65 °C.*
- Examples 9-10 describe the preparation of thermostable dairy protein-containing gellan gum gel pieces in which calcium lactate is added to a gellan gum solution at 80 °C. It is evident from the results described in these Examples that despite the presence of dairy protein and the addition of calcium lactate near the boiling point of the gellan gum solution, protein precipitation can be reduced by employing a sequestering agent.

Thus, Monsanto *de facto* teaches that "the stability problem which arises when it is attempted to incorporate milk solids, including milk protein, in a gellan gum gel piece", "where the source of calcium is added at or near the boiling point of the gellan gum solution", can be solved by incorporating a sequestering agent in the gellan gum solution, prior to the addition of the calcium lactate. The problem addressed by Monsanto is specifically related to gellan gum gel pieces, more particularly to gellan gum pieces that are prepared by adding calcium lactate to a boiling or near boiling gellan gum solution. In fact, Monsanto is directed to retaining its milk solids, including milk protein, in solution in its gellan gum solution. As can be seen Monsanto has nothing to do with the production of protein fibers. Clearly, Monsanto – unlike Shenouda – is seeking to prevent the formation and isolation of protein fibers recited in Applicant's claim 1.

In contrast, Shenouda describes a method of producing fibrous protein bundles for use as meat analogs. The terms "meat" and "meat analog" appear nowhere in Monsanto.

Shenouda's method is summarized as follows:

- (a) mixing heat-coagulable protein, alginate, and water (col. 3, lines 15-21);
- (b) cooling the mixture to unidirectionally freeze the water into elongated ice crystals and separate the protein into well-defined, well-ordered, substantially independent fibers (col. 4, line 16 through col. 6, line 33);
- (c) slicing the frozen fibrous structure in a direction parallel to the longitudinal axis of the ice crystal formation to form fiber bundles (col. 6, lines 34-35);
- (d) melting the ice crystals in the fiber bundles in the gelling bath (col. 6, lines 39-48);
- (e) gelling the alginate in the fiber bundles by infusing gelation ions (col. 7, lines 1-20);
- (f) heating the fiber bundles to coagulate the coagulable protein to permanently fix the protein material in fibrous form; (col. 7, lines 48-52);
- (g) treating the coagulated protein fiber bundles with a sequestering agent to modify the texture and enhance water-retention of the final fibers (col. 8, lines 15-37);
- (h) isolating the coagulated protein fiber bundles from the bath containing the sequestering agent (col. 8, lines 54-58).

Thus, Shenouda teaches a process in which alginate in the protein fiber bundles is gelled by infusion of gelation ions (e.g. Ca^{2+}), followed by a heat treatment to coagulate the protein to permanently fix the protein in fibrous form, followed by treatment of the coagulated protein fiber bundles with an aqueous solution of sequestering agent to modify the texture of the formed, fixed protein fibers. Prior to the gelling step (e), the protein fiber bundles are formed by mixing heat-coagulable protein, alginate and water, freezing the mixture to separate the protein into well-defined, well-ordered, substantially independent fibers, and then slicing the frozen fibrous structure in a direction parallel to the longitudinal direction of the ice crystals formed during the freezing to form fiber bundles.

Applicant's method of protein fiber production is completely different from that of Shenouda. More particularly, Shenouda fails to teach Applicant's method of fiber formation of

steps (b) – (d) of claim 1. Shenouda forms its fibers by mixing, freezing and slicing its heat-coagulable protein, alginate and water (steps (a) – (c) above). Contrary to the recitation in Applicant's claim 1, Shenouda forms its fibers without use of a metal cation. Shenouda teaches the use of gelation ions (step (e) above) to gel the alginate in the fiber bundles not to form the fibers. At the time of infusion of the gelation ions, fiber bundles are already formed in its step (c). Thus, the statement at page 4 of the Final Office Action that "Shenouda teaches ... mixing the homogenous mixture with a solution containing the gelling agent calcium chloride, i.e. a solution of a metal cation with a valency of at least 2 to form a fibrous product (Column 2 lines 41-46 and Column 7 lines 1-21) is unfounded. This statement is unsupported by Senouda.

Applicant fails to see how Monsanto could possibly have provided a person of ordinary skill with the motivation to modify the aforementioned teachings of Shenouda in such a way as to arrive at the subject matter of the present claims. To begin with, Shenouda, as shown above, fails to teach Applicant's method of fiber formation of steps (b) – (d) of pending claim 1. Since Monsanto provides no teaching whatsoever of fiber formation, Monsanto could not possibly provide a person of ordinary skill with the motivation to modify the teachings of Shenouda to arrive at Applicant's method of fiber formation of steps (b) – (d) of pending claim 1. Moreover, why would such skilled person apply the teachings of Monsanto which specifically relate to gellan gum and have nothing to do with the production of protein fibers, to product systems that employ alginate. Indeed, there is no reason to assume that the problems described in Monsanto in relation gellan gum gel pieces will also occur in alginate-based gel systems for preparing a fibrous meat substitute product.

2) No incentive exists for the skilled artisan to combine these two irreconcilable references that teach away from their combination. Monsanto seeks to reduce or prevent protein precipitation, whereas Shenouda teaches a process in which heating is required to coagulate the protein to permanently fix the protein in fibrous form. Despite the incompatibility of the products and processes taught by the cited references, the Final Office Action concludes it would be obvious to

incorporate Monsanto's order of adding a sequestering agent for the purpose of preventing milk solids, including milk protein, from precipitating out of solution in Monsanto's gellan gum solution to Shenouda's method of producing meat analogs involving the formation and isolation of protein fibers! Shenouda and Monsanto are both very clear on why and when sequestrant is used in each process. Not only are their reasons incongruent, but neither uses their respective sequestering agent for production of a protein fibrous product.

Shenouda teaches treatment of coagulated protein fiber bundles with a solution of sequestering agent after the mixture of protein, alginate, and water has been gelled by infusion of gelation ions. Shenouda uses a sequestering agent after protein fiber bundles are formed and fixed in order to modify the texture and enhance water-retention of the final fibers. By contrast, Monsanto teaches adding dry gellan gum to water and stirring at 90°C to 100°C to form a solution (page 6, lines 10-11) and that a sequestering agent may optionally be added to the dry gellan gum ("dry blended") prior to forming the solution ("prior to addition of gellan gum to water"). (p.6, lines 10-11 and lines 29-31). Monsanto teaches that it is critical to add the sequestering agent before addition of calcium ion. (p. 6, lines 23-26).

In addition, Monsanto teaches that a sequestering agent only needs to be applied if calcium ions are added to a gellan gum solution at or near boiling temperature (Example 4, for instance, shows that when calcium lactate is added at 65 °C, no protein precipitation occurs even if no sequestering agent is present). Shenouda, however, teaches a process in which alginate in the fiber bundles is gelled by infusion with calcium ions by soaking frozen slices (fiber bundles) in a chilled (4 °C), aqueous calcium chloride solution (Example 1). Clearly, infusion of the frozen fiber bundles inherently means that calcium ions are added at a low temperature, much lower than Monsanto. Hence, the teachings of Monsanto to employ a sequestering agent when adding calcium ions to a gellan gum solution at elevated temperature is irreconcilable with the teaching of Shenouda to gel frozen alginate-containing fiber bundles by soaking them in a cold calcium ions containing solution.

More particularly, Monsanto teaches a sequestering agent need only be used if calcium ions are added to the gellan gum solution at elevated temperatures, from 60 °C to 70 °C. (p. 6, lines 16-18). To the contrary, Shenouda's process infuses calcium ions by soaking frozen slices of its fiber bundles in a chilled calcium solution from 0 °C to 23 °C (col. 6, lines 53-57).

Moreover, Monsanto teaches "dry blending" its sequestering agent with gellan gum prior to addition of the gellan gum to water. Shenouda, to the contrary, teaches use of its sequestering agent near the end of its process after its protein material is formed and fixed in fibrous form and well after its heat-coagulable protein and alginate have been added to/mixed with water.

These divergent teachings are irreconcilable, teaching away from their combination.

3) If it is even possible to combine these methods, incorporating Monsanto's order of sequestering agent addition to Shenouda would not produce a meat analog with a fibrous, chewy, meat-like texture. Adding a sequestering agent to Shenouda's method prior to infusion of gelation ions into the frozen fiber bundles would interfere with the gel-inducing action of the calcium ions. As a result, any attempt at incorporating Monsanto's method into Shenouda's method would require addition of the sequestering agent after the infusion step but prior to the heat coagulation step. However, adding a sequestering agent to Shenouda's method prior to heat coagulation would likely interfere with and prevent the coagulation of the protein desired by Shenouda to produce the correct, meat-like texture. In addition, incorporation of Monsanto's order of steps would mean no sequestering agent is added to Shenouda's fiber bundles. Such an omission would definitely not result in Shenouda's desired meat analog.

Alternatively, selectively incorporating Monsanto's method into Shenouda's method would render Shenouda unsatisfactory for its intended purpose. If a proposed modification would render the prior art being modified unsatisfactory for its intended purpose, there is no suggestion or motivation to make the proposed modification. *In re Gordon*, 733 F.2d 900, 221 USPQ 1125 (Fed. Cir. 1984). For this reason alone, Applicant respectfully requests this rejection be withdrawn.

4) In addition to the aforementioned reasons, Applicant submits Shenouda and Monsanto are drawn to solving entirely different problems. Shenouda prepares meat analog with a chewy, fibrous, meat-like texture. In contrast, Monsanto prepares heat stable gel pieces for stabilizing aqueous food products. The problems encountered in Shenouda en route to creating fibrous meat analogs are not equivalent to the problems faced by Monsanto in making gel pieces for aqueous beverages, retorted snacks, etc.

Shenouda describes a method of producing alginate-based fabricated protein fiber bundles for use as meat analogs. To that end, Shenouda's method attempts to "duplicate natural meats as closely as possible," to "impart the natural and accustomed chewy, fibrous texture to the secondary protein source materials." (col. 1, lines 14-15; lines 32-33). According to Shenouda's method, achieving the right texture for meat analogs requires creating well-defined fiber bundles from secondary protein materials. (col. 2, lines 6-10; lines 41-49). The texture of the resulting meat analog is a direct result of Shenouda's method and depends on the protein source used, concentration of water-soluble alginate in the starting mixture, viscosity of the alginate compound, as well as the type and concentration of the sequestrant used.

Monsanto, on the other hand, describes gellan gum pieces for use in "coffee, tea, juices, colas, dairy drinks", as well as "(canned foods. . .e.g. leche, flan, almond milk), dessert toppings, and puddings." (p. 2, lines 31-34 through p. 3, lines 1-2). Monsanto prepares gellan gum pieces which do not melt under retort conditions (120 °C for 20 minutes). (p. 2, lines 1-5). When placed in an aqueous medium, Monsanto's gellan gum pieces equilibrate with the aqueous medium via ion-exchange. (p. 3, lines 5-13) Equilibration adds stability to the recipient aqueous food product. For instance, heat-stable gum pieces are commonly used in soy milk to keep the soy protein suspended in the milk. At p. 5, the Final Office Action states, "Monsanto teaches of forming a gelled high protein meat substitute (abstract and page 3 lines 1-4)." This statement is false. The word "meat" never appears in Monsanto, and for good reason. Monsanto has nothing to do with meat.

In creating meat analogs, Shenouda does not consider the problems Monsanto faces with preparing heat-stable gellan gum pieces. Monsanto, likewise, is not concerned with creating a meat analog, nor does its method result in fibrous bundles, like Shenouda. The differences in structure and function between Shenouda's meat analogs and Monsanto's heat stable gellan pieces necessarily dictate different methods. Monsanto's heat-stable gellan pieces are not analogous to Shenouda's meat analogs. Neither reference even attempts to solve the same problems as the other, much less provide a solution. It is unclear how Monsanto lends itself to modifying Shenouda. Accordingly, no *prima facie* obviousness is established. Applicant respectfully requests this rejection be withdrawn, since the structure and function of the respective products do not speak to the problems faced in either cited reference.

B. 35 U.S.C. §103(a) Rejection: *Shenouda in view of Monsanto further in view of Lusas*

Applicant respectfully submits the rejection of dependent claims 21 and 22 under 35 U.S.C. §103(a) should be overturned, since no *prima facie* case of obviousness is established. If claim 1 is nonobvious over the cited references, Applicant respectfully submits pending dependent claims 21 and 22 are also nonobvious. *In re Fine*, 5 USPQ.2d 1596, 1600 (Fed. Cir. 1988).

VIII. CONCLUSION

In summary, it is Applicant's position that claims 1, 2, 4-14 and 21-27 are patentable over the applied cited art reference and that the rejection of these claims should be withdrawn. Applicant therefore respectfully requests that the Board of Appeals overturn the Examiner's rejection and allow Applicant's pending claims.

Respectfully submitted,
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CLAIMS APPENDIX UNDER 37 C.F.R. § 41.37(c)(1)(viii)

The following are the claims that are involved in this Appeal.

1. Method for the preparation of a meat substitute product which comprises protein, wherein:

- a) a protein material, alginate and water are combined,
- b) the composition from step a) is formed into a homogeneous mixture,
- c) the homogeneous mixture from b) is mixed with a solution of a metal cation with a valency of at least 2, in order to form a fibrous product,
- d) the fibrous product is isolated,

wherein the protein material comprises a milk protein material, and the homogeneous mixture of milk protein material, alginate, and water is formed in step b) in the presence of an amount of a calcium complex-forming agent.

2. Method according to claim 1, wherein a mixture of the protein material and water is made, the calcium complex-forming agent added to this mixture and then the alginate is introduced.

3. Canceled

4. Method according to claim 1, wherein the calcium complex-forming agent is a phosphate material.

5. Method according to claim 4, wherein the phosphate material is selected from alkali metal and ammonium salts of phosphoric acid or polyphosphoric acid.

6. Method according to claim 5, wherein the phosphate material is sodium polyphosphate (NaPO_3)_n, wherein n is about 25.

7. Method according to claim 1, wherein the amount of calcium complex-forming agent is at least sufficient to form a complex with free calcium ions which are present.

8. Method according to claim 4, wherein the amount of phosphate material is 0.1 – 1.5% by weight, based on the total of all the constituents of the homogeneous mixture.

9. Method according to claim 1, wherein the alginate is present in an amount of 0.1 – 10% by weight, based on the total of all the constituents of the homogeneous mixture.

10. Method according to claim 9, wherein the alginate is sodium alginate.

11. Method according to claim 1, wherein the pH of the homogeneous mixture of protein, alginate, calcium complex-forming agent and water is set to a value in the range from 4 – 7.

12. Method according to claim 1, wherein to prepare a product with a meat-type structure starting from milk protein material, the pH is set to a value between 5.0 and 7.0.

13. Method according to claim 1, wherein to prepare a product with a fish-type structure starting from milk protein material, the pH is set to a value between 4.5 and 6.0.

14. Method according to claim 1, wherein a finishing material is selected from the group consisting of flavouring, colouring and vegetable or animal fat, vegetable or animal protein, and a mixture of two or more such materials is added to the homogeneous mixture which has been formed.

15-20. Canceled

21. Method according to claim 1, wherein the fibrous product, after it has been formed and isolated, is pasteurized.

22. Method according to claim 1, wherein the fibrous product is packaged.

23. Meat substitute product obtained using the method according to claim 1.

24. Savoury or sweet snack obtained by processing a fibrous product obtained by the method according to claim 1.

25. Ready to consume meat substitute product obtained by culinary processing of a product according to claim 23.

26. Method according to claim 1, wherein the milk protein material is selected from the group consisting of:

- curd from cheesemaking
- cheese
- powdered milk
- whey protein
- alkali metal, alkaline-earth metal and ammonium caseinate; and combinations thereof.

27. Method according to claim 5, wherein the phosphate material is selected from the group consisting of disodium hydrogen phosphate, sodium hexametaphosphate and trisodium phosphate; and combinations thereof.

EVIDENCE APPENDIX UNDER 37 C.F.R. § 41.37(c)(1)(ix)

No extrinsic evidence is to be considered in this Appeal.

RELATED PROCEEDINGS APPENDIX UNDER 37 C.F.R. § 41.37(c)(1)(x)

None.